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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/602,743	06/24/2003	Andreas Molisch	MH-5145	1006

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EXAMINER

JOSEPH, JAISON

ART UNIT	PAPER NUMBER
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2611

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/18/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/602,743

Applicant(s)

MOLISCH ET AL.

Examiner

Jaison Joseph

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 and 15-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 9-13, 15, 16, 21 and 22 is/are rejected.
- 7) ☒ Claim(s) 8 and 17-20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 1 – 22 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 – 7 and 9 – 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shattil (USPAP 2002/0034191) in view of Sartori et al (Neural Network Training Via Quadratic Optimization, Circuit and Systems, 1992 ISCAS '92 Proceedins , 1992 International Symposium).

Regarding claim 1, Regarding claim 1, Shattil teaches a methods for shaping a spectrum of an impulse radio signal comprising generating a set of pulses at a plurality of frequencies and a plurality of random delays (see figure 19, component 201 and 204A), weighing the set of basis pulses by weights (figure 19, component 204B), delaying the set of basis pulses by delays (figure 19, component 204C) and combining linearly the weighted and delayed basis pulses to conform the spectrum to a spectrum mask (figure 19, component 210 and paragraph 370).

Shattil does not expressly teach optimizing the weights and delays using a quadratic optimization problem. However, Sartori et al teach optimizing the weights and

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delays using quadratic optimization problem (see page 50 – 51). Therefore it would be obvious to one of ordinary skilled in the art at the time the invention was made to incorporate Sartori et al's quadratic optimization method in Shattil. The motivation or suggestion to do so is Sartori et al's method permit the designer to minimize the mean square error subjected to peak error constrains.

Regarding claim 2, which inherits the limitations of claim 1, Shattil further teaches shifting frequencies of the weighted and delayed basis pulses before the combining (see figure 19, component 204A).

Regarding claim 3, which inherits the limitations of claim 1, Shattil further teach the weights and delays are fixed over the time for a predetermined spectral mask (see paragraph 370).

Regarding claim 4, which inherits the limitations of claim 1, Shattil further teaches the weights and delays vary over time to adaptively shape the spectrum (see paragraph 370).

Regarding claim 5, which inherits the limitations of claim 1, Shattil further teaches the pulses are Gaussian in form.

Regarding claim 6, which inherits the limitations of claim 1, Shattil further teaches the weighting and delaying are performed by a set of filters and a set of delay lines (it is inherent that applying the weights using the filters and delay a signal using the delay lines) and the combining is performed by an adder (see figure 19, component 210).

Regarding claim 7, which inherits the limitations of claim 1, Shattil further teaches evaluating a cost function to determine the weights ad delays (see paragraph 376).

Regarding claim 9, which inherits the limitations of claim 1, Shattil in view of Adams further teach solving a quadratic optimization problem to approximately minimize the deviation from the spectral mask.

Regarding claim 10, which inherits the limitations of claim 9, Sartori et al further teach refining the weights and delays by nonlinear optimization (see page 50).

Regarding claim 11, which inherits the limitations of claim 10, Sartori et al further teach wherein the non-linear optimization is performed by a back-propagating neural network (see page 50 –51).

Regarding claim 12, which inherits the limitations of claim 10, Sartori et al further teach wherein the non-linear optimization is performed by a multiple layer neural network (see page 50).

Regarding claim 13, which inherits the limitations if claims 10, Sartori et al further teach wherein the non-linear optimization is performed by a simulated annealing process (see page 50 –51).

Regarding claim 21, the claimed apparatus including the features corresponds to subject matter mentioned above in the rejection of claim 1 is applicable hereto.

Regarding claim 22, which inherits the limitations of claim 21, Shattil further teaches a set of oscillators configured to shift frequencies of the weighted and delayed pulses before the combining (see paragraph 377).

Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shattil (USPAP 2002/0034191) in view of Sartori et al (Neural Network Training Via

Quadratic Optimization, Circuit and Systems, 1992 ISCAS '92 Proceedings, 1992 International Symposium) and further in view of Basala et al (US Patent 5,742,814).

Regarding claim 15 and 16, Shattil in view of Adams does not expressly teach greedy approach to optimize the delays in quadratic optimization program. However Basala et al teach quadratic optimization program utilizing greedy approach to optimize the result (see column 53, line 50 – column 54, line 10). Therefore it would be obvious to one of ordinary skill in the art at the time the invention was made to incorporate Basala in Shattil in view of Adams. The motivation or suggestion to do so is to reduce the complexity in the quadratic optimization program.

Allowable Subject Matter

Claims 8 and 17 – 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jaison Joseph whose telephone number is (571) 272-6041. The examiner can normally be reached on M-F 9:30 - 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jaison Joseph
04/11/2007


CHIEH M. FAN
SUPERVISORY PATENT EXAMINER